



# AVIAN ORAL SWAB COLLECTION GUIDELINES

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Kim Signs, DVM – Zoonotic Disease Epidemiologist  
Carrie Bonemer, DVM – Arbovirus Coordinator  
Erik Foster – Zoonotic Disease Biologist

**Michigan Department of Community Health  
Division of Communicable Disease and Immunization**



# WNV WORKING GROUP

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- Michigan Department of Community Health
- Michigan Department of Agriculture
- Michigan Department of Natural Resources
- Michigan Department of Environmental Quality
- Michigan State University
  - Insect Microbiology Laboratory – Department of Microbiology and Molecular Genetics
  - Diagnostic Center for Population and Animal Health – College of Veterinary Medicine

# **The following presentation outlines new protocols for the surveillance of West Nile Virus (WNV) in avian samples.**

## **Introduction**

Kim Signs, DVM – Zoonotic Disease Epidemiologist

## **Preparations and Safety Concerns**

Carrie Bonemer, DVM – Arbovirus Coordinator

## **Swabbing Procedure**

Erik Foster – Zoonotic Disease Biologist



# INTRODUCTION

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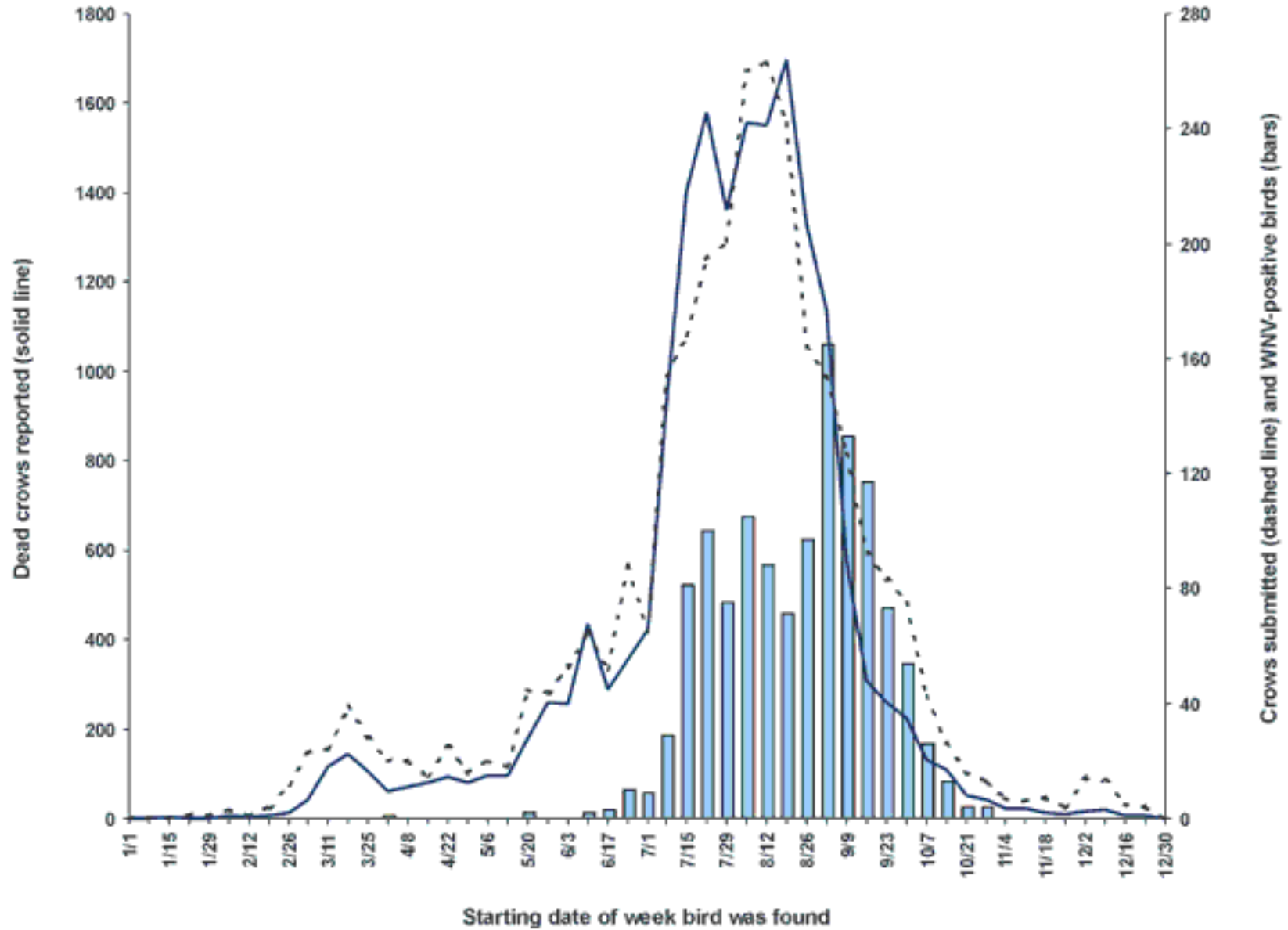
- The Michigan Department of Community Health (MDCH) will again be providing funds for specimen testing through the Diagnostic Center for Population and Animal Health (DCPAH) at no cost to interested jurisdictions for the 2004 season.
- With advances in science and tightening budgets, the methods used will be updated to include avian oral swabs utilizing the VecTest® antigen-capture wicking assay.



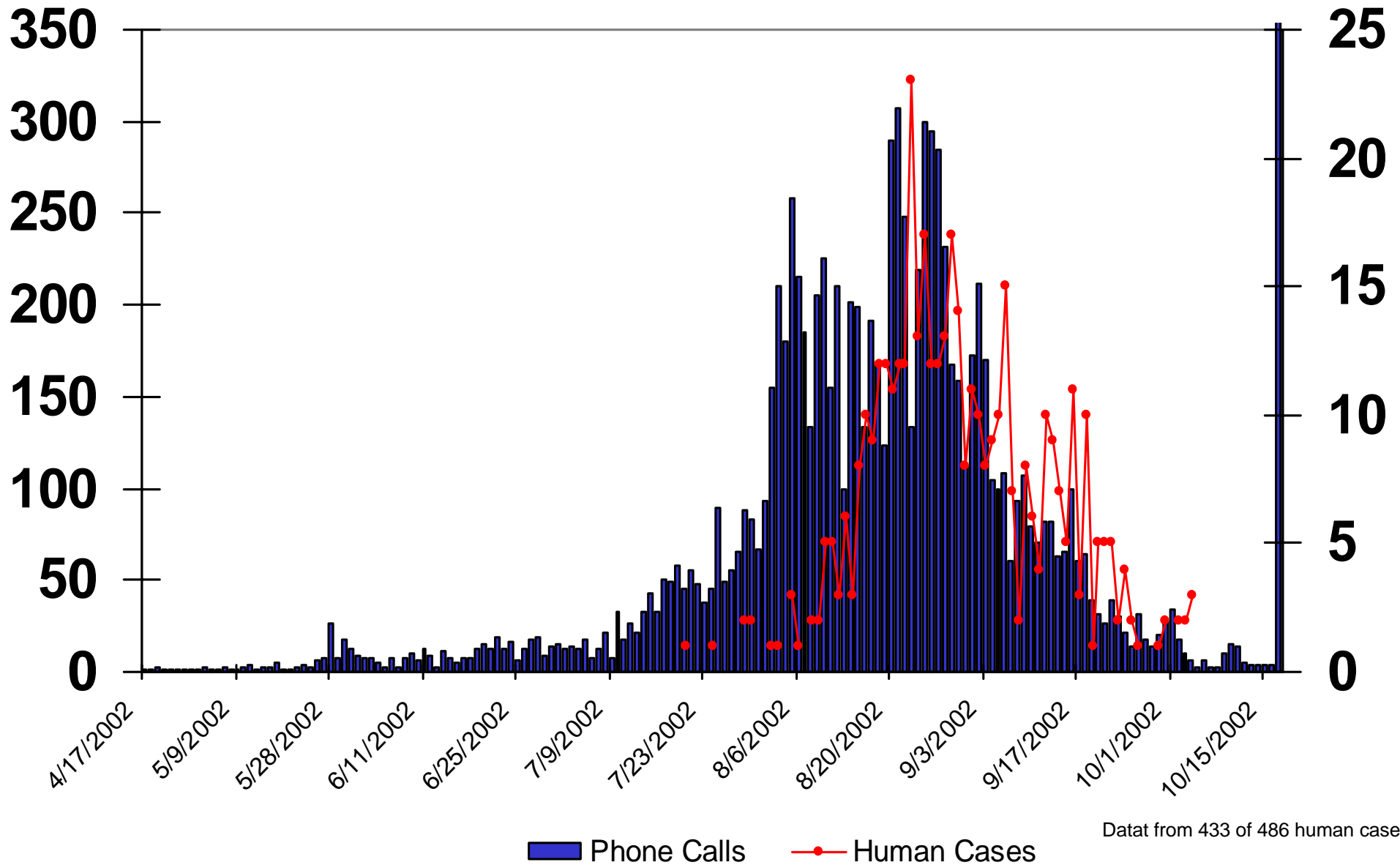
# Importance of Bird Surveillance

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- NYS study showed reports of dead birds provided the earliest warning of viral activity
- Waiting for a positive bird can delay prevention and control activities
- Dead crow reports can proceed confirmation of viral activity by several months



# Phone Reports of Dead Birds versus Human Cases in Michigan as of November 26<sup>th</sup>, 2002

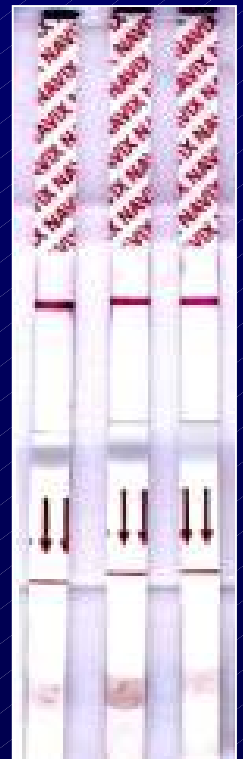






# WHAT IS THE VecTest?

- Designed by Medical Analysis Systems, Inc.
- It is a rapid detection dipstick test for West Nile Virus (WNV).
- Corvids shed virus in their saliva, which is swabbed and placed in a buffer solution, then wicked up on to a test strip. WNV, if present, binds to a specific antibody on the test strip producing a reddish color change indicating the presence of WNV in the sample.
- The assay doesn't measure the quantity of viral antigen in a sample only the presence of it.
- The first positive corvid by VecTest® in each county will be verified by PCR.







# BIRD SPECIMENS

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- At this time, appropriate bird specimens eligible for testing are restricted to corvids:
  - ✓ American Crow (*Corvus brachyrhynchos*)
  - ✓ Blue Jay (*Cyanocitta cristata*)
  - ✓ Common Raven (*Corvus corax*)
- This testing technique is not accurate on some bird species and has not been validated for most species.
- Other birds, such as raptors and non-corvids, should be submitted through the Michigan Department of Natural Resources (MDNR), but **prior** approval from DCPAH or MDNR is required.



# BIRD PHOTOS: SHOULD I SUBMIT THIS BIRD?



YES – AMERICAN CROW



YES – BLUE JAY

NO – BROWN  
HEADED  
COWBIRD



Photo by Marshall Iliff



NO – RED  
WINGED  
BLACKBIRD



YES – COMMON RAVEN



Photo courtesy Provincial Government of Alberta, 1998

NO – STARLING



Photo courtesy Backyard Birding, Indiana, USA

NO – GRACKLE



# SUBMISSION AND RESULTS

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- The Emerging Diseases/WNV website ([www.michigan.gov/westnilevirus](http://www.michigan.gov/westnilevirus)) will again be the primary means of receiving dead corvid reports and specimens (oral swabs) for testing by local health jurisdictions for 2004.
- Surveillance and testing data will be available on the web and updated daily to bi-weekly.



# SUBMISSION AND RESULTS

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- Dead bird testing will be conducted in any submitting jurisdiction until a positive is received at the zip-code level. Dead bird 'reports' may still be submitted via the website report form, but no further testing will be provided at that zip code without previous authorization or agreement.
- **Decision to participate in this program will ultimately be made at the local level.**





# WNV ON THE WEB

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- Site provides comprehensive information about WNV and also makes real-time surveillance information readily available to communities and individuals, aiding local decision-making regarding vector control and disease prevention
- Received over 1,000,000 hits during the 2003 WNV season
- Observations of dead birds will again be accepted at the WNV website and citizens will be informed whether or not the specimen is needed for testing at the zip-code level.



# WHAT TO CONSIDER

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- Only birds that have recently died (<48 hours) should be considered for testing. Carcasses that are decomposed, desiccated or maggot-infested should not be sampled.





# WHAT TO CONSIDER

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- Location of dead bird. Will the bird provide information on the risk potential for human exposure?
- The specimen in the 'freshest' condition is recommended for testing.
- In all instances, whether a bird is eligible for submission or not, documenting dead bird reports can be useful for mapping and tracking patterns, indicating potential increases in WNV activity.
- Recent studies have demonstrated that WNV positive birds may be a predictor of human transmission prior to September (early season).



# Preparations for Corvid Oral Swabbing



# NIOSH Recommendations for Workers

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- [www.cdc.gov/niosh/topics/westnile/](http://www.cdc.gov/niosh/topics/westnile/)
- [www.michigan.gov/westnilevirus](http://www.michigan.gov/westnilevirus), Library, Related Resources, Information for Lab and Field Workers
- Included in handouts



# NIOSH Recommendations (con't)

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- The most likely route of WNV infection to humans is via the bite of an infected mosquito.
- Other known routes are via organ transplantation, blood transfusion, possibly breast milk, transplacental, and skin penetration during handling of WNV- infected tissues.



# Symptoms of WNV Infection

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- 80% of people infected with WNV have no symptoms at all.
- 20% of people infected with WNV become ill, and most have mild flu-like symptoms which can include fever, fatigue, headache, and muscle and joint pain.
- Rarely, severe illness can develop and include high fever, stiff neck, disorientation, tremors, muscle weakness, and paralysis. Severe cases may be fatal, and persons >50yrs may be more at risk for severe disease.



# NIOSH Recommendations (con't)

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“Workers are at risk of WNV infection if their skin is penetrated or cut while handling WNV-infected tissues”



# NIOSH Recommendations, Handling Dead Animals

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“Anyone handling dead animals  
should wear gloves.”



# NIOSH Recommendations for Employers

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- Provide training on WNV transmission and potential risks of WNV exposure and infection.
- Provide appropriate personal protective equipment that provides barrier protection.
- Stress the importance of timely reporting of all injuries and illnesses.





# NIOSH Recommendations for Laboratory and Field Workers

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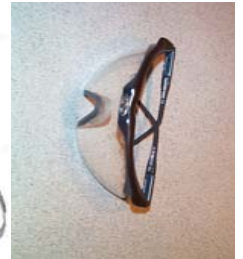
- Reduce exposure to blood and other tissues from WNV infected cases.
- “Use personal protective equipment that provides **barrier protection** including gloves, gowns, safety glasses, and/or face shields to avoid dermal and mucous membrane contact with blood and other tissues.”



# NIOSH Recommendations for Workers

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- Use personal protective equipment.
- Wash hands with soap and water after removing gloves.
- Report all sharps-related injuries to the supervisor.
- Report any symptoms consistent with WNV infection to the supervisor and contact health care provider.

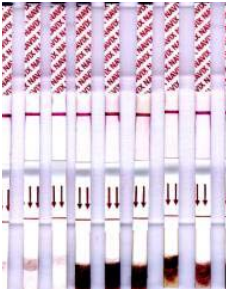


# SWABBING PROCEDURE

SWABS CAN BE PERFORMED

a) IN THE FIELD

b) AT THE LOCAL HEALTH DEPARTMENT





# TESTING UNIT ACQUISITION

- Oral swab kits can be obtained from the MDCH Bureau of Labs by using the 'Clinical Specimen Shipping Units Requisition' form (DCH-0568 - Request Unit 18), by calling (517) 335-9867, or by fax (517) 335-9039. Requisition forms are available online at:
- [http://www.michigan.gov/documents/dch-0568\\_7396\\_7.pdf](http://www.michigan.gov/documents/dch-0568_7396_7.pdf)
- WNV Kit Includes:

Instruction Sheet	Styrofoam Container	Express Mail Stamp
Test Requisition	Mailing Sleeve	Numbering Labels
Dacron Swab	Diagnostic Specimens Label	2 Plastic Bags
Transport Tube	Express Mail Label	Wooden Craft Stick





# FIELD COLLECTION OF AVIAN ORAL SWABS

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- **No entire bird carcasses will be accepted by DCPAH unless prior authorization is received.**
- For special arrangements including wildlife and non-corvid bird testing, contact MDNR Rose Lake (517-373-9358).
- For questions about testing equines or companion animals, contact MDA Animal Industry Division (517-373-1077).
- All corvid specimens will be submitted to DCPAH in the form of an oral swab.



## NOTE ON SHIPMENT

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- Specimens should be shipped the day of collection. If the specimen is collected on Friday, there is no Saturday delivery to the processing lab. There are two options available. The carcass can:
  - a) Be stored refrigerated over the weekend, swabbed the following Monday.
  - b) Be swabbed on Friday, the swab frozen over the weekend for Monday shipment.
- **NOTE:** The shipper is responsible for being sure that their package is in compliance with the current shipping regulations.



## Criteria for Specimen Rejection by the DCPAH:

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- Absence of specimen identification number or lab issued requisition form.
- Incomplete or incorrectly filled out requisition form.
- Presence of maggots or larvae in the sample.
- Uncapped specimen tube or damage to specimen tube.
- Outdated sample (specimen must be received within **1 week** of collection date).





# QUESTIONS/COMMENTS

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MDCH staff will be available to answer any questions or to hear concerns from interested parties.

**MDCH WNV/Zoonotic Disease Staff:** (517) 335-8165

Fax: (517) 335-8263

## **OTHER NUMBERS:**

Department of Community Health Bureau of Lab (Kits) (517) 335-9867

Department of Agriculture - Animal Industry Division (517) 373-1077

Diagnostic Center for Population and Animal Health (DCPAH) (517) 353-2296

Department of Natural Resources Rose Lake (517) 373-9358